

SONY

3-786-746-21 (1)

Stereo Cassette Deck

Operating Instructions

*TC-K730ES
TC-K333ESR*

Notice for the Customers in the United States

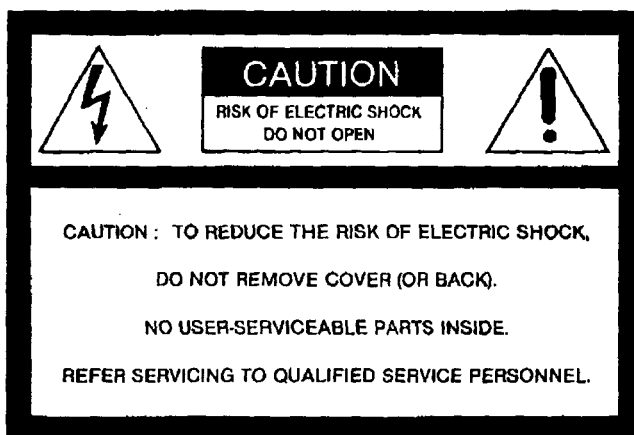
OWNER'S RECORD

The model and serial numbers are located at the rear. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. TC-K730ES Serial No. _____

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Notice for the Customers in Canada

This apparatus complies with the Class B limits for radio noise emissions set out in Radio Interference Regulations.

INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna

- Relocate the equipment with respect to the receiver

- Move the equipment away from the receiver

- Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S.

Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

Notice for the Customers in the United Kingdom

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

- Blue: Neutral

- Brown: Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black. The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

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WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

FEATURES

Calibration brings out the best of every tape

Separate controls permit precise adjustment of recording bias current over a range of $\pm 20\%$ and recording level (sensitivity) over a range of ± 3 dB. This assures optimum performance with any kind of tape.

Large multi-function peak program meters

These meters provide accurate level indication and maintain the peak readings for about 2 seconds, for easy recording level setting which makes full use of the tape's dynamic range.

Linear counter shows tape travel time

The electronic tape counter displays the playing time in minutes and seconds. It can also be used to determine the remaining playback or recording time to the end of the tape.

3-head system for instant monitoring

Separate record, playback and erase heads let you instantly check the recorded sound while a recording is in progress. The record and playback heads are made of laser amorphous material, to ensure wide dynamic range, extremely low noise and superior sound quality.

Other convenient functions

- Any specific point on the tape can be stored in memory, to easily locate it later or automatically start playback from there.
- Unattended recording or automatic playback can be carried out with an optional timer.
- Dolby C-type noise reduction system guarantees natural and noise-free sound reproduction.
- Automatic tape slack take-up function prevents tape damage when cassette is inserted.

PRECAUTIONS

On safety

- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the power cord, pull it out by the plug. Do not pull the cord itself.

On installation

- Good air circulation is essential to prevent internal heat build-up in the unit. Place the unit in a location with sufficient air circulation.
- Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, or mechanical vibration.
- Install the unit with the front panel facing toward you. Do not install the unit in an inclined position.
- If you remove the side panels to install the unit in a rack, be sure to secure the metal casing with the supplied screws (M4 × 8 mm in length). Do NOT use the longer screws that held the side panels in place.

On head cleaning

The heads and tape path should be cleaned after 10 hours of operation.

Dirty heads and a dirty tape path may cause:

- Loss of high frequency response
- Loss of sound volume
- Sound drop-out

On operation

Because of the safety mechanism, the function buttons will not operate if the cassette holder is not completely closed, if there is no cassette or if a cassette has been incorrectly inserted into the cassette holder.

For customers in the U.S.A.

For detailed safety precautions, see the leaflet IMPORTANT SAFEGUARDS.

OPERATING VOLTAGE

Before connecting the unit to the power source, check that the operating voltage of your unit is the same as the local power line voltage.

The USA and Canada model operates on 120 V AC.

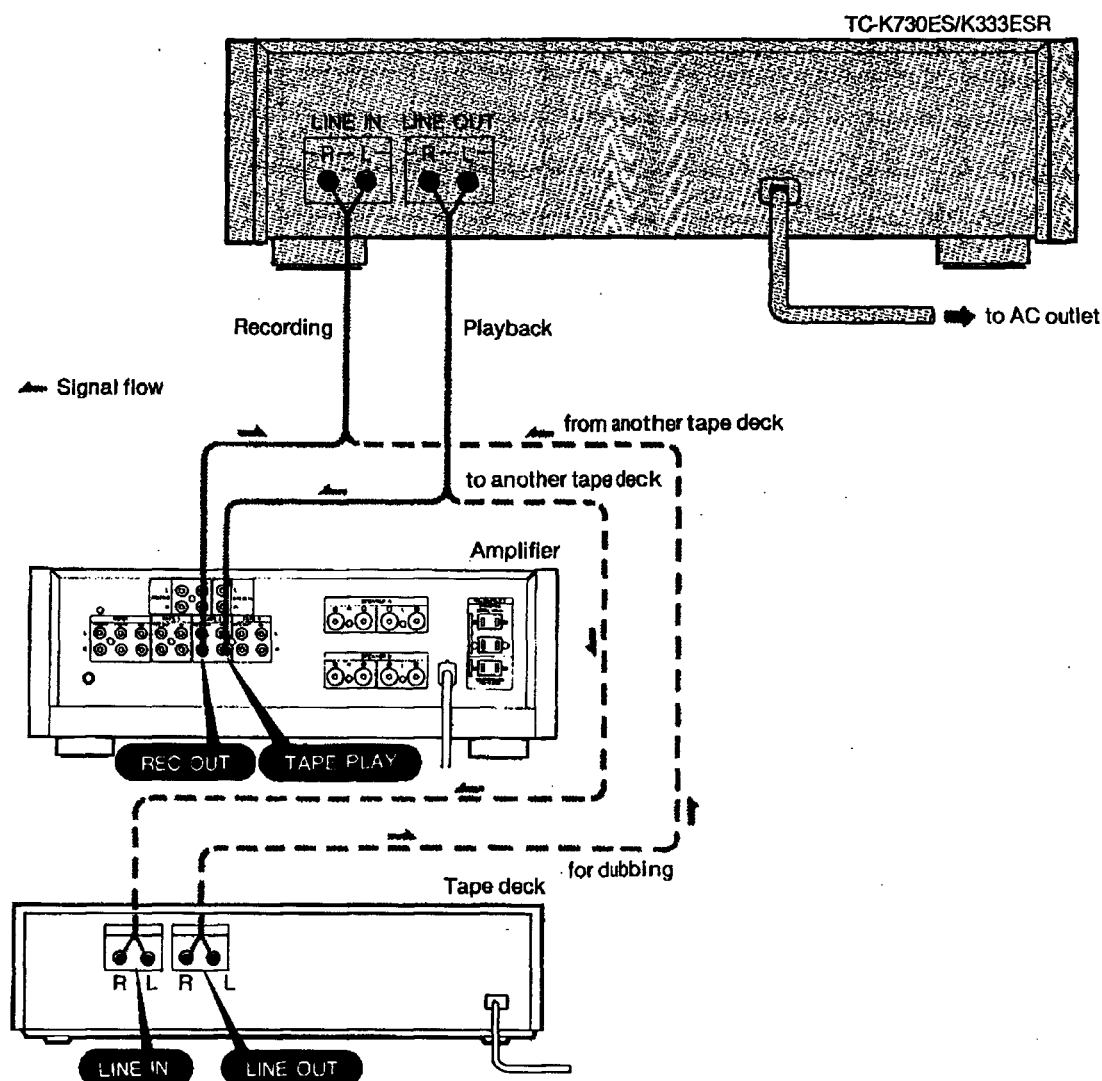
The European model operates on 220 V AC (or 240 V AC adjustable by authorized Sony personnel).

The United Kingdom model operates on 240 V AC (or 220 V AC adjustable by authorized Sony personnel).

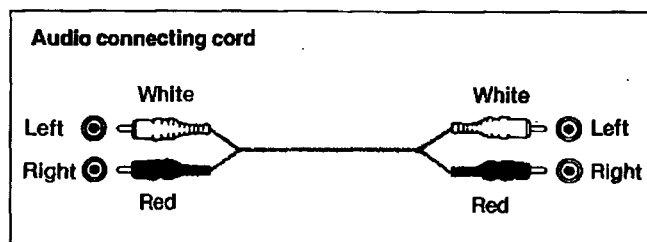
The model for other countries operates on 120, 220 or 240 V AC. The voltage selector is located on the rear panel. If the selector must be reset, **disconnect the AC power cord** and set the selector to the appropriate voltage.

CONNECTIONS

Turn the power to all components off before making any connections.



Use the supplied cables and make connections as shown in the illustration.



Notes on connection

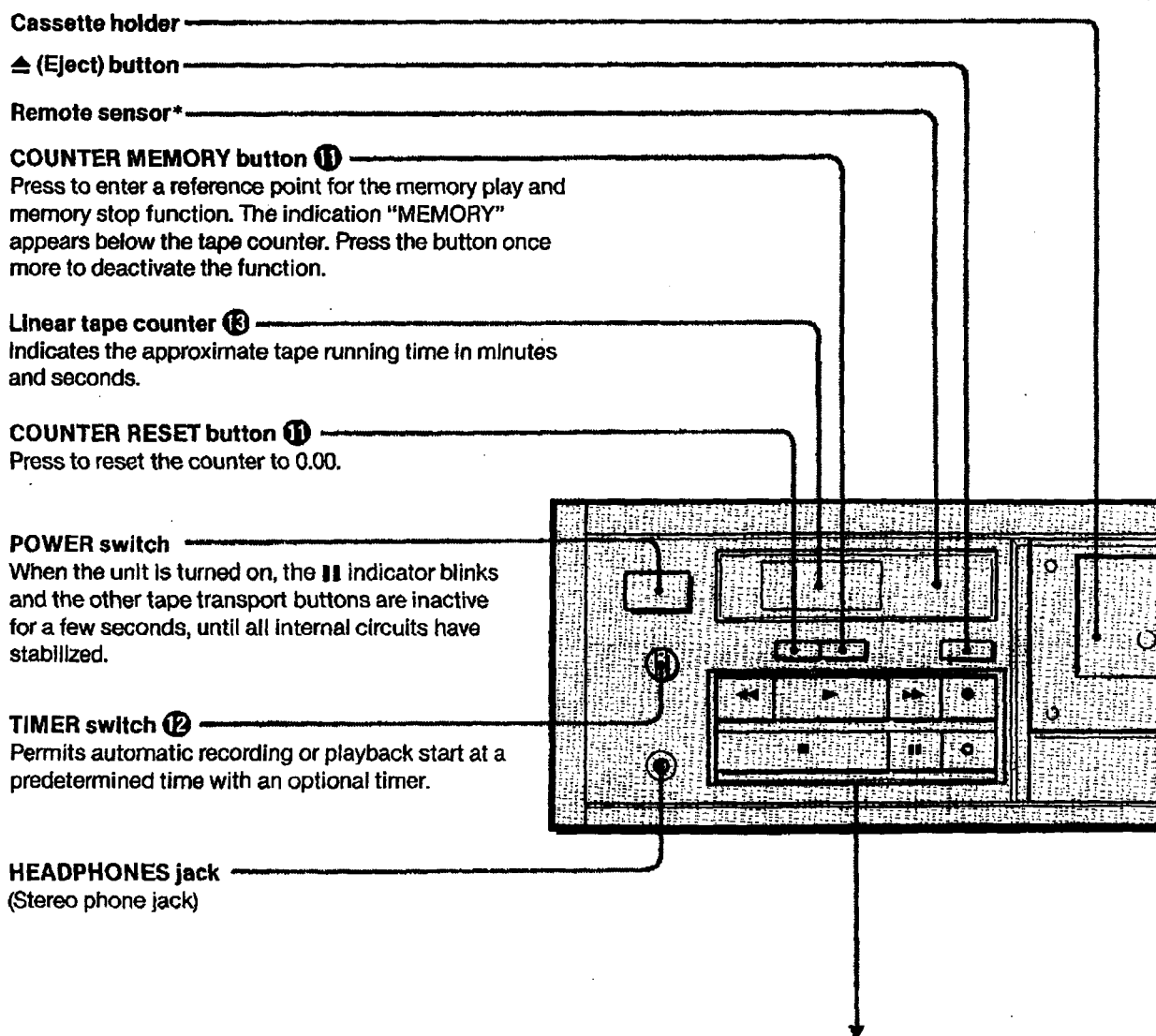
- Note that the red plugs of the supplied connecting cord are for the right channel and the white plugs for the left channel.
- Always insert the plugs fully into the jacks. A loose connection may cause hum pickup.
- Always hold the plug when disconnecting a cable. Do not pull the cord itself.

Note for the European models

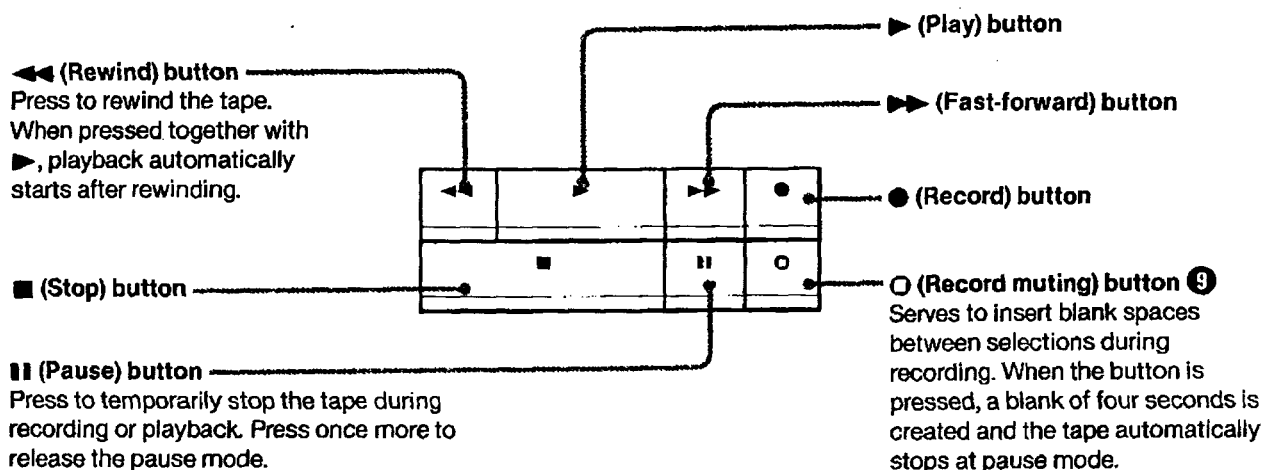
A white mark is visible on one lead of the power cord. This will help you drive the tape deck and other components in the system "in phase" by matching the AC power cord polarities with AC outlet polarities. In most cases, the marked power cord of the tape deck should be inserted into the negative potential of the AC outlet.

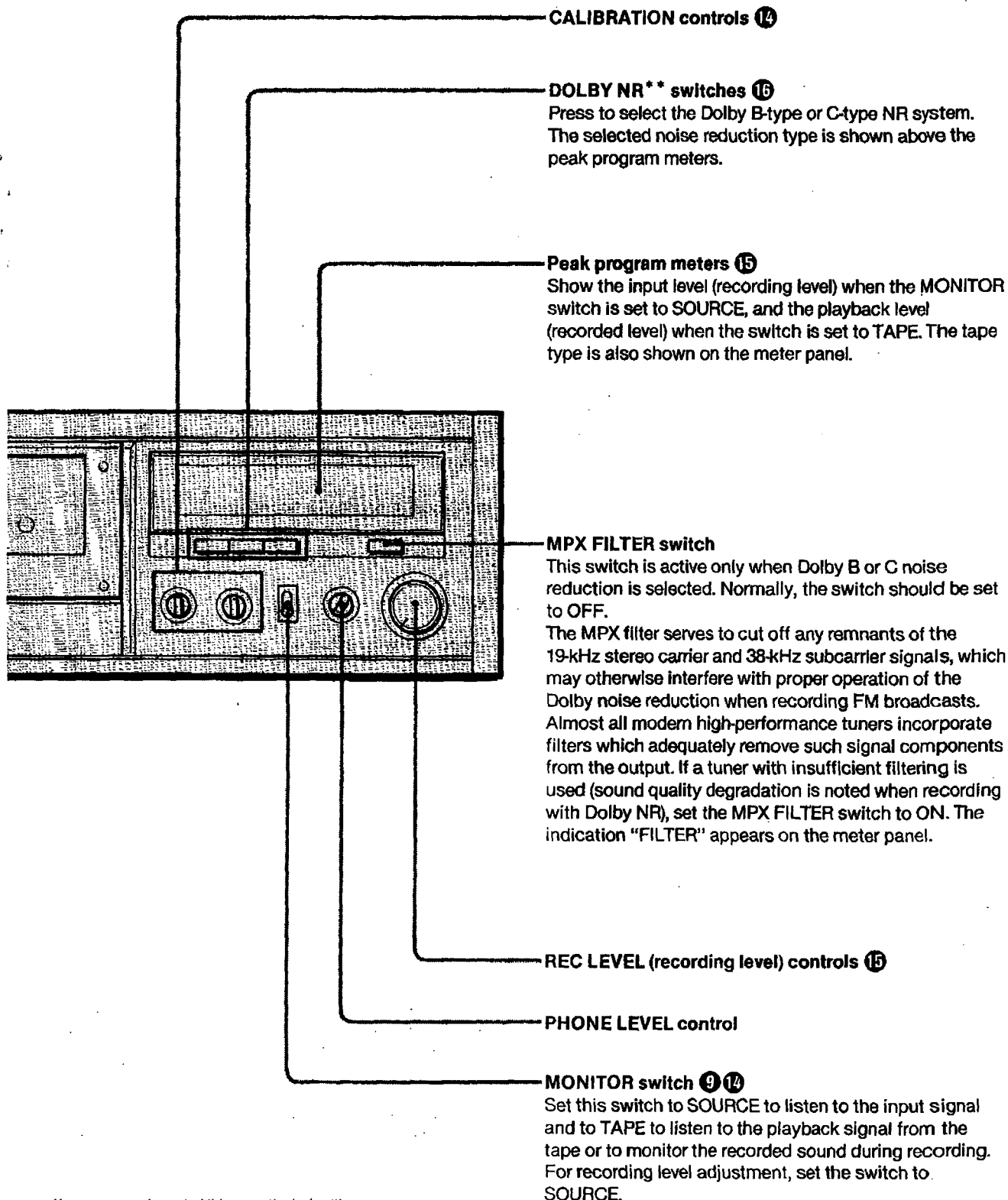
LOCATION AND FUNCTION OF CONTROLS

Refer to the page indicated by a ● for details.



Tape operation buttons





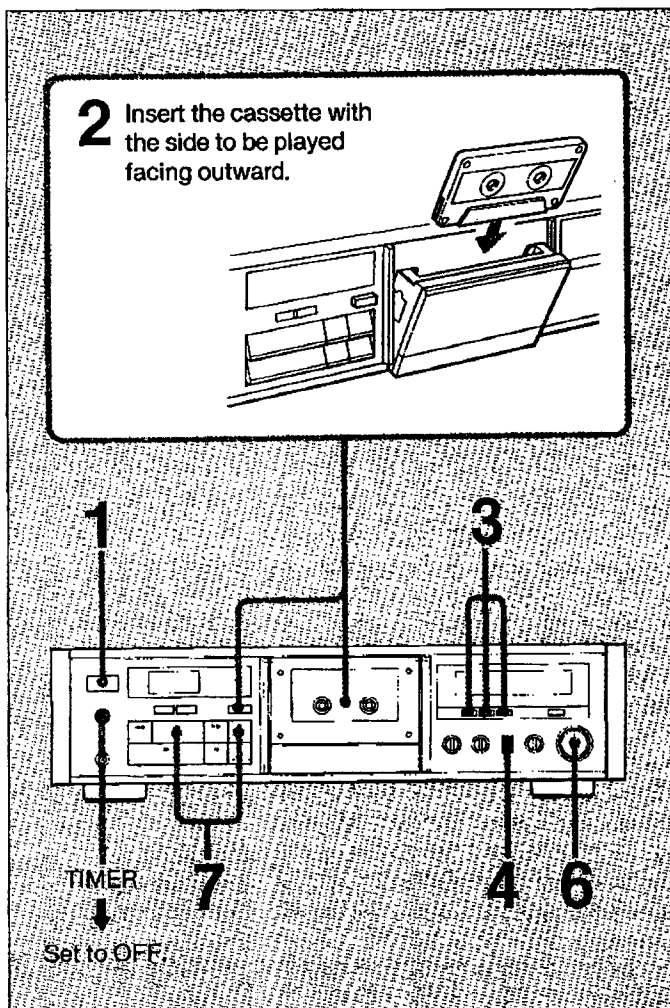
* You can remotely control this cassette deck with:
— A remote commander that has an  mark and comes with a Sony amplifier or receiver and which can be used to control a cassette deck.

** Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

RECORDING

Preparations

- Set the **TIMER** switch to **OFF** before turning the unit on.
If it is set to **REC** or **PLAY**, that function will start automatically when the power is turned on.
- Make sure that the tab of the cassette is not removed.



- 1 Set the **POWER** switch to **ON**.
- 2 Press **▲**, insert the cassette and close the cassette holder.
When the cassette is inserted, any slack in the tape is automatically taken up.
- 3 Select the desired position of the **DOLBY NR** switches (**B**, **C**, or **OFF**).
- 4 Set the **MONITOR** switch to **SOURCE**.
- 5 Play the program source to be recorded.
- 6 Adjust the recording level with the **REC LEVEL** controls.
(see page 15.)
- 7 Press **●** while holding down **▶**.

When the tape end is reached during recording
The recording mode is automatically released and the tape stops.

To stop recording,
Press **■**.

Note on cassette types

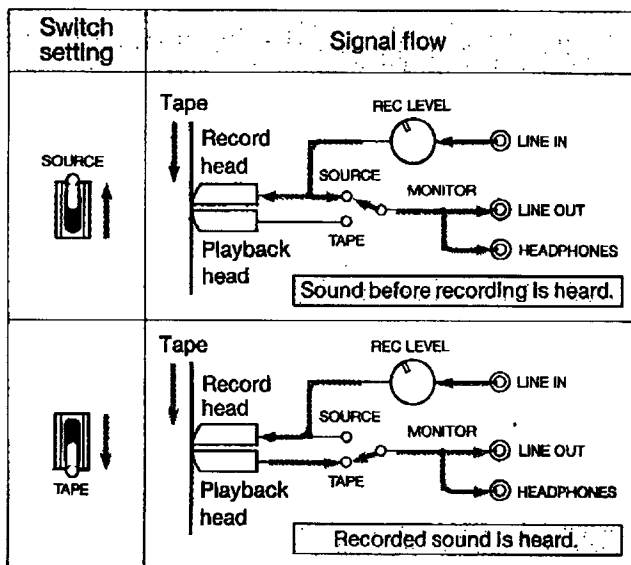
There are four types of cassette tapes (**TYPE I – IV**). **TYPE I** (normal), **TYPE II** (**CrO₂**), and **TYPE IV** (metal) can be used with this cassette deck. When a cassette is inserted, the tape type is determined by means of detector slots on the rear of the cassette housing. The necessary bias and equalization settings are chosen automatically and the tape type is displayed on the meter panel.

RECORD MONITORING

As this deck has three separate heads for recording, playback and erasure, the quality of a recording in progress can be checked by monitoring the recorded sound. Set the MONITOR switch to SOURCE to listen to the input signal before recording, and to TAPE to listen to the sound from the tape. Change the switch setting to compare the sound and make sure there is no distortion due to excessive level settings or sound degradation due to head contamination, etc.

If the amplifier has a monitor switch, set it to the "Tape" position.

MONITOR switch setting and signal flow



TO ACHIEVE PRECISE RECORDING STARTS

- 1 Press **II** after adjusting the recording level.
- 2 Press **●** while holding down **▶**.
- 3 Press **II** again at the precise point where you want the recording to begin. The recording pause mode is released and recording starts.

INSTANT EDIT RECORDING

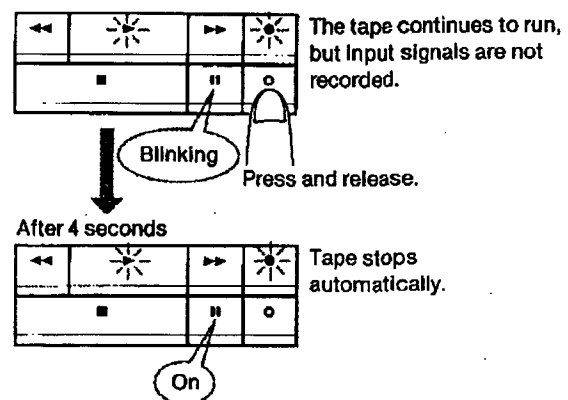
This function is useful when editing previously recorded material. In the playback mode, press **●** while holding down **▶**. The deck switches immediately from playback to recording without stopping the tape. Note that any previous material on the tape will be erased from this point.

TO INSERT BLANK SPACES BETWEEN SELECTIONS

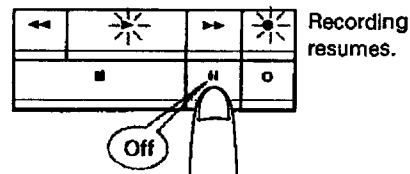
By using the **O** button during recording, you can eliminate unwanted portions of the recording source and insert blank segments between selections on tape.

To automatically insert a 4-second blank

- 1 Press **O** during recording.



- 2 To resume recording, press **II**.



If the MONITOR switch is set to SOURCE, the input signal can be heard also during the muting interval, which makes it easy to check for correct timing.

To insert a blank less than four seconds long

After pressing **O**, press **II** before the deck enters the pause mode. Regular recording resumes.

To insert a blank more than four seconds long

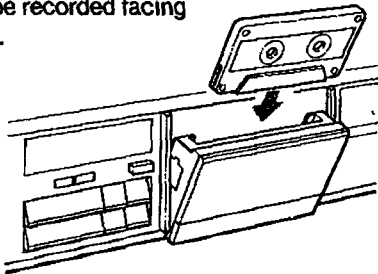
Keep **O** depressed for as long as you wish the blank to continue. After four seconds, the **II** indicator flashes more rapidly. When you release **O**, the unit enters the pause mode. Press **II** to resume recording.

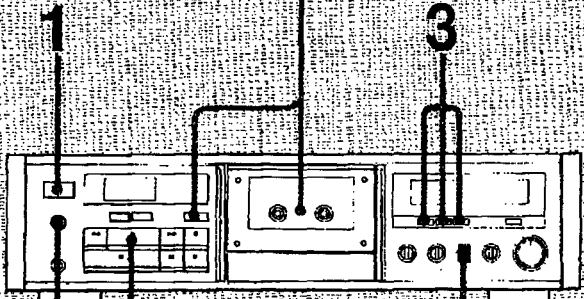
PLAYBACK

Preparations

Set the **TIMER** switch to OFF before turning the unit on. If it is set to REC or PLAY, that function will start automatically when the power is turned on.

2 Insert the cassette with the side to be recorded facing outward.





1 points to the POWER switch.

2 points to the cassette slot.

3 points to the DOLBY NR switches (B, C, or OFF).

4 points to the MONITOR switch.

5 points to the amplifier level control.

6 points to the TIMER switch, with a label below it: **TIMER** and **Set to OFF**.

1 Set the **POWER** switch to **ON**.

2 Press **▲**, insert the cassette and close the cassette holder.
When the cassette is inserted, any slack in the tape is automatically taken up.

3 Select the required position of the **DOLBY NR** switches (**B**, **C**, or **OFF**).

4 Set the **MONITOR** switch to **TAPE**.

5 Set the amplifier to the tape monitor condition.

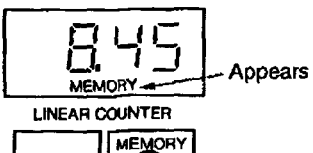
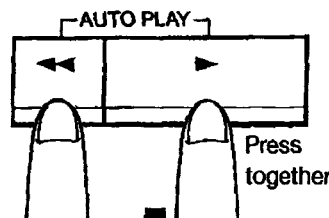
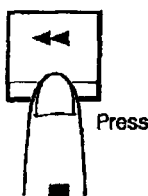
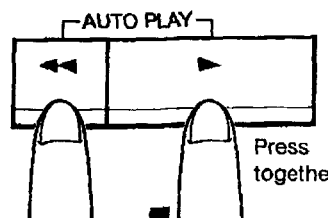
6 Press **▶**.

When the tape end is reached during playback
The playback mode is automatically released and the tape stops.

To stop playback,
Press **■**.

AUTOPLAY, MEMORY STOP AND MEMORY PLAY

By using the COUNTER MEMORY and COUNTER RESET buttons, the following convenient functions are possible.

TO START PLAYBACK FROM THE BEGINNING OF THE TAPE AFTER REWIND—Auto play	TO REWIND THE TAPE TO A DESIRED POINT AND STOP—Memory stop	TO REWIND THE TAPE TO A DESIRED POINT AND START PLAYBACK—Memory play
Set the COUNTER MEMORY button to OFF. Make sure that the MEMORY indicator below the counter is not displayed. If it is displayed, press the MEMORY button.	Set the COUNTER MEMORY button to ON at the point to which you wish to return after recording or playback. The MEMORY indicator below the counter is displayed, and this point and the 0.00 point are stored in memory.	 The diagram shows a digital counter display with the number '8.45'. Below the display is a 'MEMORY' indicator light which is shown as lit. An arrow points to the indicator with the label 'Appears'. Below the indicator is a 'MEMORY' button.
 The diagram shows a rectangular button labeled 'AUTO PLAY'. It has two arrows pointing left and right. Two fingers are shown pressing the button together.	 The diagram shows a rectangular button with a left-pointing arrow. A finger is shown pressing the button.	 The diagram shows a rectangular button labeled 'AUTO PLAY'. It has two arrows pointing left and right. Two fingers are shown pressing the button together.
After the tape is completely rewound, playback will start automatically.	The tape is rewound to the point where MEMORY was set to ON or the 0.00 point and stops.	The tape is rewound to the point where MEMORY was set to ON or the 0.00 point and playback starts automatically.

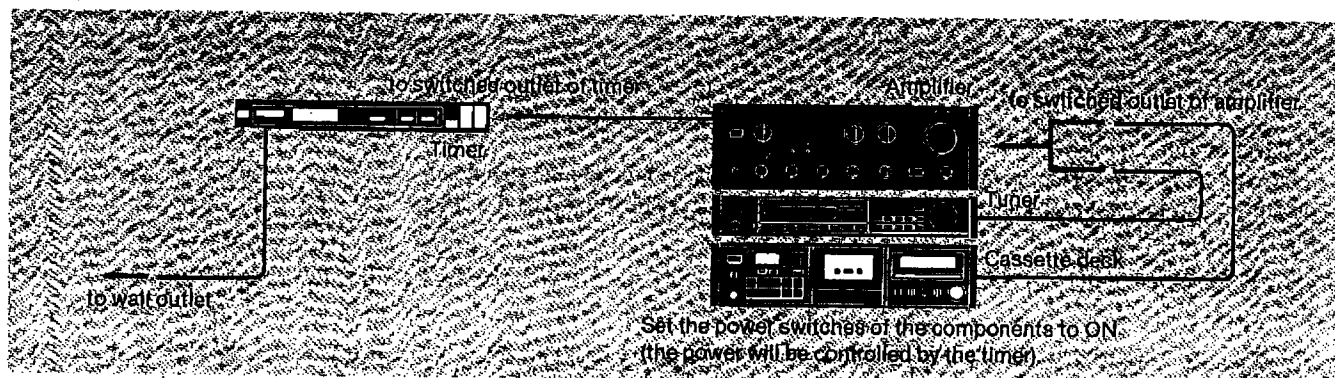
Notes

- If ◀◀ is pressed once more after the tape has stopped at the MEMORY ON point, the tape will next stop at the 0.00 point. If that point was reached first, pressing ◀◀ will rewind the tape to the MEMORY ON point. The same applies for memory play.
- The tape stops slightly before the actual MEMORY ON or 0.00 point, to permit playback without cutting off the start of a selection.

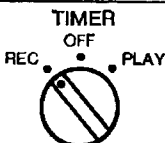
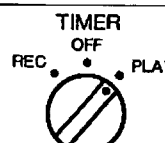
TIMER-ACTIVATED RECORDING AND PLAYBACK

By connecting a commercially available timer, automatic recording or playback can be performed at a preset time. If a timer which is programmable for several on/off operations is used, repeated automatic operation, for example for a series of unattended recordings, is also possible.

Connections for timer operation



Operation

		TIMER-ACTIVATED RECORDING —Automatic recording start at a preselected time	TIMER-ACTIVATED PLAYBACK —Automatic playback start at a preselected time
Preparations	Timer	• Make sure that power switches of components connected to the timer are set to ON. • Switch power to the components on with the timer.	
	Amplifier, tuner, etc.	• Set input switch of amplifier to TUNER. • Adjust tuner to desired broadcast station.	• Set input switch of amplifier to TAPE. • Adjust listening volume to a suitable level.
	Cassette deck	• Insert the cassette and set DOLBY NR switches to the required position. • Adjust the recording level.	• Insert the cassette, set DOLBY NR switches to the required position, and set MONITOR switch to TAPE.
Timer standby	Timer	• Set timer to the desired start and stop time(s). • Activate timer control. Power to the connected components will now be cut off. • Confirm that power has been interrupted by the timer.	
	Cassette deck	Set TIMER switch to REC. 	Set TIMER switch to PLAY. 

When timer-activated recording or playback is completed

Be sure to set the TIMER switch on the cassette deck to OFF. If the switch is left in the REC position, the unit will automatically enter the record mode the next time power is turned on, and recorded material may be erased.

TIMER switch precaution

Change the setting of the TIMER switch only while the unit is turned off. If the switch is operated shortly after switching the unit on (within 3 seconds), playback or recording may start inadvertently.

USE OF THE LINEAR COUNTER

Set the counter indication to 0.00 by pressing the COUNTER RESET button at the beginning of the tape, before starting to record or playback. Then you can easily index the tape and keep track of the location of points you might want to return to.

As the tape counter of this cassette deck indicates the tape travel time in minutes and seconds, the following convenient functions are also available.

TO CHECK THE TOTAL RECORDING TIME OF A TAPE	TO CHECK THE REMAINING RECORDING TIME ON A TAPE
Set the counter to 0.00 at the start of the tape and fast-forward the cassette to the end. The counter now shows the approximate recording time available on that cassette. One side of the cassette permits recording for 30 m 15 s.	Stop the tape at a convenient point, set the counter to 0.00 and fast-forward the tape to the end. The counter now shows the approximate remaining time on that cassette. Return to the original point by using the memory stop function (see page 11). The remaining recording time on the cassette is 2 m 30 s.
Note Do not turn the power off while checking the time. When the power is turned on again, the counter will be reset to 0.00.	

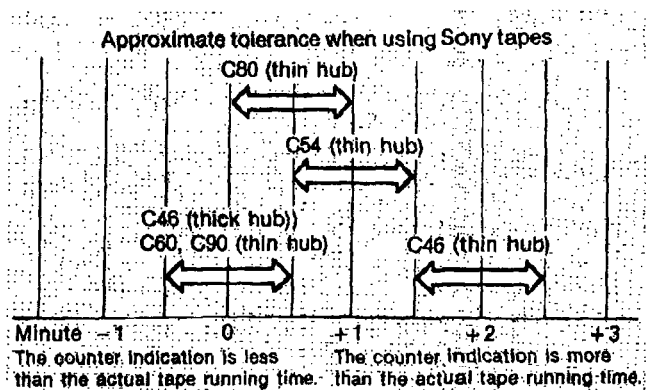
Accuracy of the counter

As the counter is not a digital clock, the displayed figures are not exactly equal to the actual elapsed time. The counter accuracy will vary depending on factors such as the tape length and hub diameter of the cassette.

The counter tolerance when playing one side of a Sony cassette from start to finish is shown in the illustration at right.

Notes

- If necessary, verify the accuracy of the counter when using cassette tapes other than Sony or tapes of special length.
- Pay attention to the length of the leader tape when recording.



ERASING A TAPE

When recording on a cassette tape, any previously recorded material will be automatically erased.

To erase a tape without making a new recording:

- 1 Make sure that the tabs of the cassette are intact or the slots are covered with adhesive tape.
- 2 Turn the REC LEVEL controls for both channels fully to minimum (0).
- 3 Press ● while holding down ►.

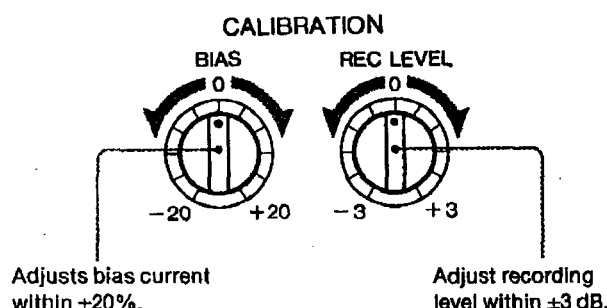
Let the tape run to the tape end or the end of the recorded section.

TO ENSURE OPTIMUM RECORDING CONDITIONS

BIAS AND RECORDING LEVEL CALIBRATION

There are many different types of cassettes on the market, with varying magnetic properties. The ATS (Automatic Tape Selection) system of this cassette deck establishes appropriate equalization characteristics and bias current for each tape type, but often an additional calibration can produce even better results. Use the bias current and recording level calibration function of this deck if you perceive a sonic difference between the source and the recorded sound.

Calibration controls

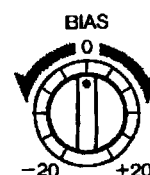


Perform calibration as follows.

- 1 Insert the cassette to be used for recording.
- 2 Set the amplifier to the tape monitor mode and play the program source to be recorded.
- 3 Press ● and ► to start recording.

4 Bias calibration

Set the MONITOR switch to TAPE and adjust the BIAS control so that there is no sonic difference between SOURCE and TAPE.



5 Recording level calibration

Switch the MONITOR switch between SOURCE and TAPE and adjust the REC LEVEL controls to obtain equal perceived volume (loudness) in both settings.



The bias current is now adjusted to the optimum level and the tape sensitivity is compensated for. Rewind the tape and start the actual recording.

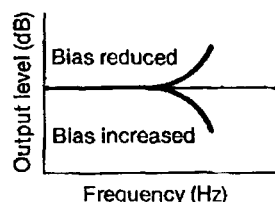
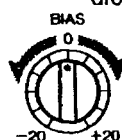
- If the bias current is higher or lower than the optimum setting for a certain tape, the frequency response changes as shown in the chart below. This can be used to tailor the response to your liking, for example by slightly emphasizing the upper or lower end.
- The frequency response of metal tapes is much less affected by changes of the bias current than other tape types. With some tapes, the adjustment range of this deck ($\pm 20\%$) may therefore not be sufficient to cover every possible requirement.

Bias calibration

Choosing the optimum bias current for a tape ensures minimum distortion and flat frequency response. If bias current is too low, high-frequency response is boosted, but distortion also tends to increase. If bias is too high, distortion is reduced, but the high-frequency response will be rolled off.

High-frequency response rises

High-frequency response drops



Recording level calibration

Even when the recording level is adjusted correctly, using a tape with low sensitivity will result in a low playback level. The REC LEVEL CALIBRATION control lets you compensate for such sensitivity differences of various tapes, to achieve equal recording and playback levels. This is especially important when using the Dolby NR system, as this circuit is most effective when recording and playback levels are the same.

RECORDING LEVEL ADJUSTMENT

EFFECTIVE LEVEL SETTINGS

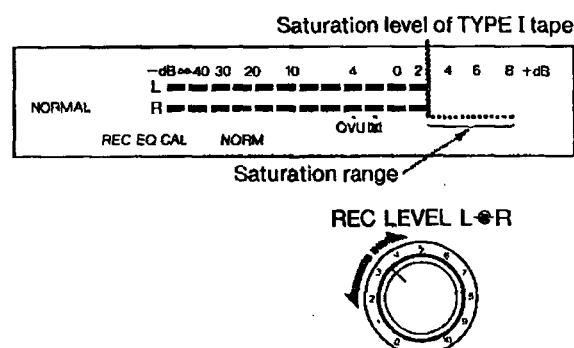
The key to good recordings is setting the recording level as high as possible without driving the tape into saturation.

- If the recording level is too low, low-level signals will be buried in the noise floor of the tape (tape hiss).
- If the recording level is too high, signals exceeding the saturation level of the tape will be distorted.

The saturation level differs according to tape types. When a cassette is inserted in this cassette deck, a row of red indicators to the lower right of the meter bars marks the saturation range for this tape type.

Adjusting the recording level

- 1 Set the MONITOR switch to SOURCE.
- 2 Adjust the REC LEVEL controls so that the highest signal levels will cause the meter segments just before the red line to light up.



SATURATION LEVEL AND RECORDING LEVEL

The saturation level of a tape is usually lower in the higher frequencies than in the low range. When recording material with a distinct high-frequency content, the record level should therefore be set somewhat lower than usual. The following table may serve as a guideline for setting the record level of various types of music when using Sony tapes.

Peak recording level

Tape type	Sony cassettes	Programs with strong low to mid-frequency content (vocal, etc.)	Programs with strong mid to high-frequency content (piano, guitar, flute, etc.)
TYPE I	HF-S	+3 dB	+1 dB
	HF-ES	+4 dB	+2 dB
TYPE II	UX-S	+3 dB	+2 dB
TYPE IV	METAL-ES	+6 dB	+6 dB

The above levels refer to short signal peaks. For continuous signals, these settings would be too high.

PROGRAM SOURCES AND RECORDING LEVEL

Recording from FM broadcasts

As the peak levels of FM broadcasts are controlled by the transmitter, the recording level for broadcasts may be set to a fixed value.

When using a tuner with calibration tone (reference level) output

The calibration tone of a tuner usually is a 400-Hz signal corresponding to 50% modulation. Actual broadcasts may contain levels up to 6 dB higher (100% modulation). The recording level should therefore be set in such a way that the meter reading with the calibration tone is about 6 dB lower than the maximum levels shown in the table.

Recording from phonograph records

The peak levels on analog records are also controlled to remain within a certain range, but there are considerable differences between various records. The optimum recording level should therefore be set for each record individually. By examining the record surface visually, sections with peak levels can be found (grooves appear large and uneven). Play back such a section and adjust the recording level to the maximum meter reading shown in the table.

Recording from Compact Discs

To adjust recording levels, look for a section on the disc which contains peak levels and adjust for maximum meter readings shown in the table.

Tape dubbing

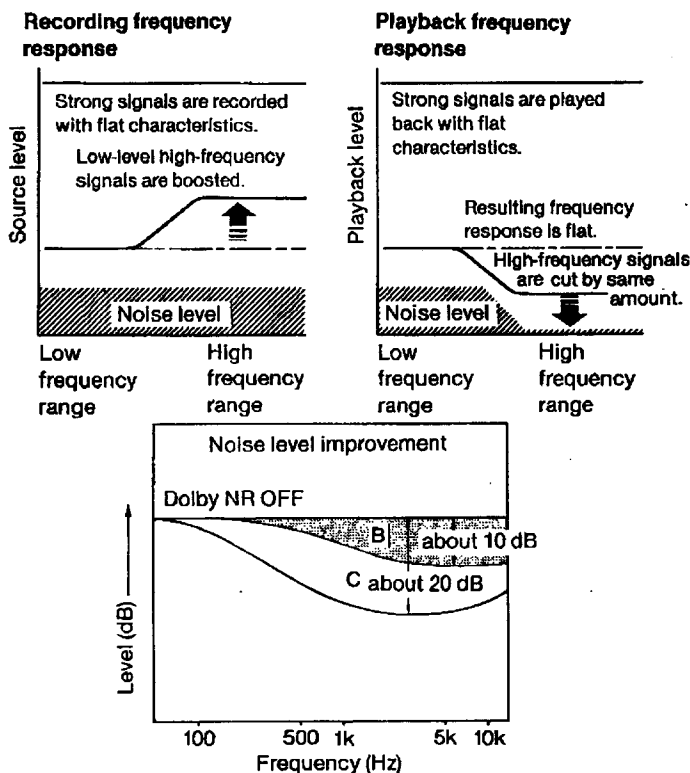
If the two tape decks have identical or very similar meters, adjust the recording level to obtain equal meter readings on both decks. If the meters are different, play a loud section on the source tape and adjust the recording level accordingly. For dubbing, the higher-quality deck should be used as the playback machine.

THE DOLBY NR SYSTEM

The Dolby NR system is designed to reduce tape hiss by combined treatment during recording and playback. There are three types of Dolby NR systems: the A-type for professional use, the B-type found in most consumer-grade cassette decks and the C-type which reduces noise more effectively than the B-type.

During recording, low-level high-frequency signals, which tend to be obscured by tape hiss, are boosted so that they are substantially higher in level than any tape noise. During playback, the signal is reduced to the original level. This also reduces the level of any tape noise by the same amount, resulting in a typical noise reduction of about 10 dB at 5 kHz (B-type). The C-type circuit reduces noise by about 20 dB and begins to take effect at lower frequencies than the B-type system.

The C-type system also incorporates an anti-saturation network which automatically lowers high-level high-frequency signals during recording and restores them to the original level in playback. This reduces distortion and improves the MOL (maximum output level) at 10 kHz by about 4 dB.



SETTING OF DOLBY NR SWITCHES

As described above, the Dolby NR system encodes signals during recording and decodes them with reverse characteristics during playback. It is therefore essential that the same system as used during the recording process is also chosen for playback. We recommend that you label your cassettes as being either non-Dolby NR, Dolby B NR or Dolby C NR.

NOTES ON CASSETTES

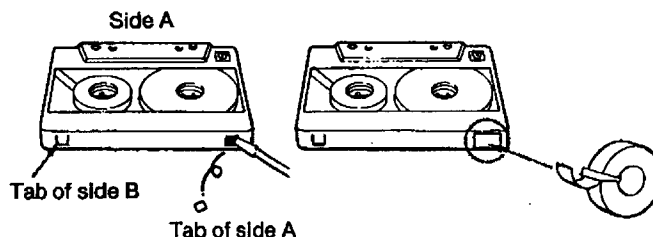
TO PREVENT ACCIDENTAL ERASURE

To protect side A recording

Break out the tab of side A.

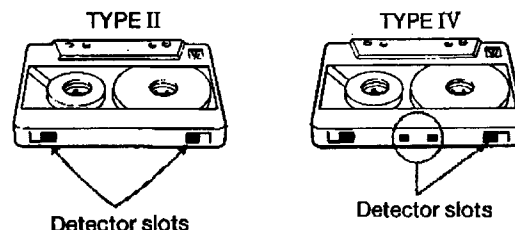
To reuse a cassette

Cover each slot with plastic tape.



When using TYPE II (CrO₂) or TYPE IV (metal) cassettes

Be careful not to cover the detector slots which are necessary for automatic tape selector of deck A.



Note on C-120 cassettes

C-120 cassettes use extremely thin tape which tangles easily when the tape transport is stopped and started frequently. Avoid using C-120 cassettes except when necessary for long continuous recording and playback.

Notes on cassette care

- Avoid touching the tape surface of a cassette, as any dirt or dust will contaminate the heads.
- Keep cassettes away from equipment with magnets, such as speakers and amplifiers, as erasure or distortion on the recorded tape could occur.
- Do not expose cassettes to direct sunlight, extremely cold temperature or moisture.

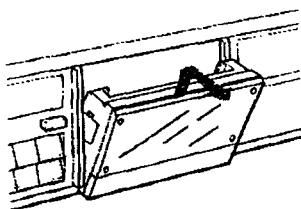
MAINTENANCE

CLEANING THE HEADS AND TAPE PATH

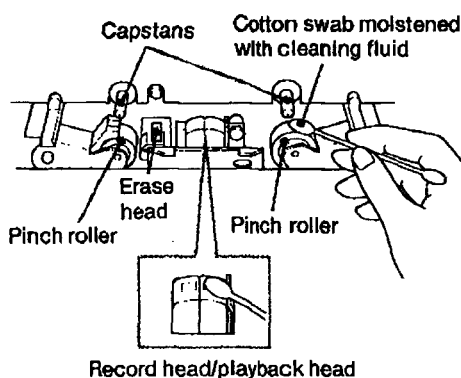
Clean all surfaces over which the tape travels after every 10 hours of operation. To obtain optimum results, cleaning before every important recording is recommended.

Cleaning

- 1 open the cassette holder and remove the cassette holder cover.

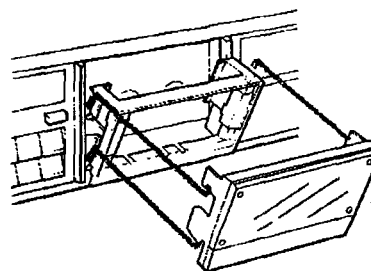


- 2 Wipe the heads, capstans and pinch rollers with a cotton swab slightly moistened with cleaning fluid or alcohol.



Clean the entire circumference of the pinch rollers and capstans.

- 3 Replace the cassette holder cover.



Do not insert a cassette until the cleaned areas are completely dry.

DEMAGNETIZING THE HEADS

After an extended period of use, residual magnetism may build up on heads and other metal parts, which will cause hiss and loss of high frequencies. To prevent this, demagnetize the heads and all metal parts about every 20 to 30 hours of use with a commercially available head demagnetizer.

Be sure that the POWER switch of the cassette deck is turned off before starting the demagnetizing procedure.

SPECIFICATIONS

Recording system 4-track 2-channel stereo
 Bias frequency 210 kHz
 Heads Erase head × 1 (S & F head)
 Record head × 1 (LA head)
 Playback head × 1 (LA head)
 Motors Capstan motor × 1 (direct drive linear torque BSL motor)
 Reel motor × 1 (DC motor)
 Wow and flutter ±0.04% W.peak (IEC)
 0.025% WRMS
 Fast-forward and rewind time
 Approx. 90 sec (with C-60 cassette)
 Frequency response
 Dolby NR OFF
 TYPE IV cassette (Sony METAL-ES)
 20 – 21,000 Hz ±3 dB (DIN)
 20 – 16,000 Hz ±3 dB (0 VU recording level)
 15 – 22,000 Hz
 TYPE II cassette (Sony UX-S)
 20 – 19,000 Hz ±3 dB (DIN)
 15 – 20,000 Hz
 TYPE I cassette (Sony HF-S)
 20 – 17,000 Hz ±3 dB (DIN)
 15 – 19,000 Hz
 Signal-to-noise ratio (at peak level)

Cassette Dolby NR system	TYPE I (Sony HF-S)	TYPE II (Sony UX-S)	TYPE IV (Sony METAL-ES)
C-TYPE ON	69 dB	72 dB	73 dB
B-TYPE ON	63 dB	66 dB	67 dB
OFF	56 dB	59 dB	60 dB

Total harmonic distortion 0.8% (with Sony METAL-ES cassette)
 Inputs Line Inputs (phono jacks)
 Sensitivity 77.5 mV
 Input impedance 50 k ohms
 Outputs Line outputs (phono jacks)
 Rated output level 0.44 V (–5 dB) at
 load impedance 47 k ohms
 Minimum load impedance 10 k ohms
 Headphones output (stereo phone jack)
 Output level continuously variable
 from 0 – 3 mW (at load impedance 32 ohms)

General

Power requirements
 U.S.A. and Canada: 120 V AC, 60 Hz
 United Kingdom: 240 V AC, 50 Hz
 (220 V AC adjustable by authorized Sony personnel)
 European countries: 220 V AC, 50/60 Hz
 (240 V AC adjustable by authorized Sony personnel)
 Other countries: 120, 220 or 240 V AC
 adjustable, 50/60 Hz
 Power consumption 30 watts
 Dimensions Approx. 470 × 125 × 350 mm (w/h/d)
 (18 3/8 × 5 × 13 3/4 inches)
 Weight Approx. 9.5 kg (22 lb)
 Supplied accessories
 Connecting cord (2)
 Screws (8)

Peak program meters

Display range –40 to +8 dB
 Frequency response
 20 – 20,000 Hz ±1.5 dB
 Attack time 1 ms
 Recovery time 750 ms (from 0 to –20 dB)
 Number of display segments
 16 each for left and right channel

Design and specifications are subject to change without notice.

Note

This appliance conforms with EEC Directives 76/889 and 82/499 regarding interference suppression.

TROUBLESHOOTING

The following checks will help you correct the most common problems encountered with cassette decks. Should the problem persist after you have made these checks, consult your nearest Sony service facility.

Before proceeding, first check these basic points:

- The power cord is firmly connected.
- Amplifier connections are properly established.
- Heads, capstans, pinch rollers are clean.
- Amplifier controls and switches are set correctly.

	Symptom	Cause	Remedy
General operation	Function buttons do not activate.	Button pressed immediately after power was turned on (during 3-seconds standby interval).	Wait until blinking of indicator stops.
		Cassette holder is not fully closed.	Close the holder completely.
		Cassette is not properly inserted.	Insert cassette correctly.
	Recording or playback starts when power is turned on.	TIMER switch is set to REC or PLAY.	Set TIMER switch to OFF when timer function is not to be used.
Tape transport	● button does not activate.	Tab of cassette is removed.	Cover the slot with adhesive tape.
	Tape does not run.	 button is pressed.	Press once more to release pause mode.
	Loud transport noise is heard during rewind or fast-forward.	This depends on the cassette used and is not a problem.	————
	Tape stops before being fully rewind.	COUNTER MEMORY button set to ON.	Press button once more to set the memory function to OFF.
Cassette shell is deformed or defect.		————	
Recording and playback	Recording or playback not possible.	MONITOR switch is set to SOURCE during playback.	Set switch to TAPE.
		Heads are dirty.	Clean heads.
		Connections are not made properly.	Establish correct connections.
		Amplifier switches are not set properly.	Set amplifier controls to appropriate positions.
	Sound level is low or unstable, dropouts occur.	Heads, capstans, pinch rollers are dirty.	Clean these parts.
	Increased noise or poor reproduction of high frequencies.	Heads are magnetized.	Demagnetize heads.
	Incomplete erasure.	Erase head is dirty.	Clean erase head.
	Improper sound balance.	DOLBY NR switches not set to the correct position.	Select same positions for recording and playback.
BIAS or REC LEVEL CALIBRATION controls not adjusted correctly.		Perform calibration before recording (page 14).	
Noise	Hum noise is heard.	Unit is placed too close to a power amplifier.	Move the unit away from the power amplifier.